

# PATENT SPECIFICATION

NO DRAWINGS

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## COMPLETE SPECIFICATION

### A Washing Process for Textile Fabrics

5 We, CONSTRUCTIEWERKHUIZEN EMILE d'HOOGHE P.V.B.A., a Body Corporate established under the laws of Belgium, of 30, Bellevuestraat, Ledeberg, Belgium, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention is concerned with a process for washing textile fabrics, such as linen and clothing for instance, either by washing in watery soap solutions or by chemical cleaning in some appropriate liquid.

15 Some installations are already known for washing under pressure in which the pressure builds up within the process vessel, essentially as in a disinfection boiler. Such installations do however have the inconvenience that the pressure can not be maintained, for instance, when the drain of the machine is opened.

20 In other known set-ups, the washing fluid is cycled through the linen by a pump alternatively creating pressure and vacuum.

25 Further set-ups are known in which the process vessel is part of a closed circuit in which the process solutions are constantly cycled under pressure.

30 The abovementioned known set-ups all show numerous disadvantages such as for instance; the requirement of rather intricate apparatus, the uncontrollable build-up of foam in the washing solutions, the impossibility of centrifugating the textile fabrics under pressure, etc.

35 The main feature of the process according to this invention is to be found in the fact that the soaking, the washing operation and centrifugation are carried out under constant pressure of a fluid which is independent of the washing solution, thus markedly improving the efficiency of the washing process and allowing the washing solution to be drained

away quickly at the end of each operation.

45 As a result of tests made with this process it was found, that by application of aforesaid pressure, the various solutions required up till now for a washing program can be reduced to one single washing operation and that the cleaning effect is greatly improved with respect to the processes known so far.

50 An additional advantage obtained hereby is the fact that by limiting the number of baths to one or two, the washing wear of the objects to be cleaned is reduced, so that these objects can be worn longer for the same number of effected washings.

55 It is known, indeed, that fabrics are subjected to considerable wear during washing or cleaning, and more particularly in the course of the actual washing baths, the wear originating from the mutual rubbing effect of the linen during the washing process.

60 Yet a further advantage which is obtained by reducing the number of operations of each complete washing is that the effective cleaning time of an entire washing cycle becomes shorter.

65 A well known washing programme, which is effectively improved by the process of the present invention, consists of the following successive phases: the usual soaking; a first bath or actual washing operation at 60°C; rinsing; a second bath or actual washing operation at 90°C; a first centrifugation; a second rinsing; a second centrifugation; a third rinsing and finally a third centrifugation.

70 By adopting the process of the present invention, the bath at 60°C, the first rinsing and the second bath at 90°C are appropriately replaced by a single washing operation which takes place under pressure.

75 Accordingly, the present invention comprises a washing process performed in a process vessel for textile fabrics, comprising a

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single washing operation at elevated pressure, at least one centrifuging operation at elevated pressure, and at least one rinsing operation, the pressures during said washing and centrifuging operations being realised by means of a fluid, suitably steam and/or compressed air, which is independent of the washing liquid and which is fed into said process vessel.

It is preferred to carry out the washing operation at about 102°C; this temperature moreover assumes an effective sterilisation of the treated fabrics.

In another washing programme according to the present invention, the washing operation is preceded by a soaking under pressure.

In one embodiment of the invention, following the first centrifuging operation under pressure and the first rinsing operation, there is carried out a second centrifugation under pressure, a second rinsing operation, and thereafter a third centrifugation under pressure.

As stated, pressure must be maintained during the various centrifugation operations, and this pressure is preferably the same as that used during the washing operation and is maintained until no more liquid flows from the machine on centrifugation.

In order to prevent the fixing of albumin and pigments in the course of the above mentioned washing operation at 102°C, the alkaline content of the bath is preferably increased.

The pressure applied to the machine from without during the washing process will preferably be obtained by feeding steam or compressed air into the washing vessel.

Preferably however, the desired pressure will be obtained by feeding both steam and compressed air to the vessel, whereby the steam is used for raising the temperature from approximately 80°C to some 102°C, whilst the compressed air is used to obtain the desired pressure.

In a form of embodiment taken as example, this pressure will be of the order of 300 to 500 g/cm<sup>2</sup>. In an alternative embodiment, the pressure is greater than 500 g/cm<sup>2</sup>.

By the process of the present invention, a most effective washing process is obtained, the efficiency of which is very high and whereby wear of the objects is favourably reduced, whilst the duration of the washing cycle is shortened.

#### WHAT WE CLAIM IS:—

1. A washing process performed in a process

vessel for textile fabrics, comprising a single washing operation at elevated pressure, at least one centrifuging operation at elevated pressure, and at least one rinsing operation, the pressures during said washing and centrifuging operations being realised by means of a fluid, suitably steam and/or compressed air, which is independent of the washing liquid and which is fed into said process vessel.

2. A washing process according to claim 1, wherein the single washing operation is carried out at 102°C.

3. A washing process according to claim 1 or 2, which comprises a first centrifuging operation under pressure; a first rinsing operation; a second centrifuging operation under pressure; a second rinsing operation; and finally a third centrifuging operation under pressure.

4. A washing process according to claim 1, 2 or 3, wherein said pressure at which said washing operation is performed is comprised between 300 g/cm<sup>2</sup> and 500g/cm<sup>2</sup>.

5. A washing process according to any of claims 1, 2 or 3, wherein the pressure at which said washing operation is performed is higher than 500g/cm<sup>2</sup>.

6. A washing process according to any of the preceding claims wherein said pressures at which said centrifuging operations are performed are not higher than during said washing operation.

7. A washing process according to any of the preceding claims, wherein said pressure during each said centrifuging operation is maintained as long as there is a flow of liquid from an outlet opening of said process vessel.

8. A washing process according to any of the preceding claims, wherein said washing operation is preceded by a soaking operation under pressure.

9. A washing process according to any of the preceding claims, wherein the alkaline content of the bath is increased during said washing operation in order to prevent the fixation of albumin and pigments.

10. A washing process substantially as hereinbefore described and as claimed in claim 1.

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